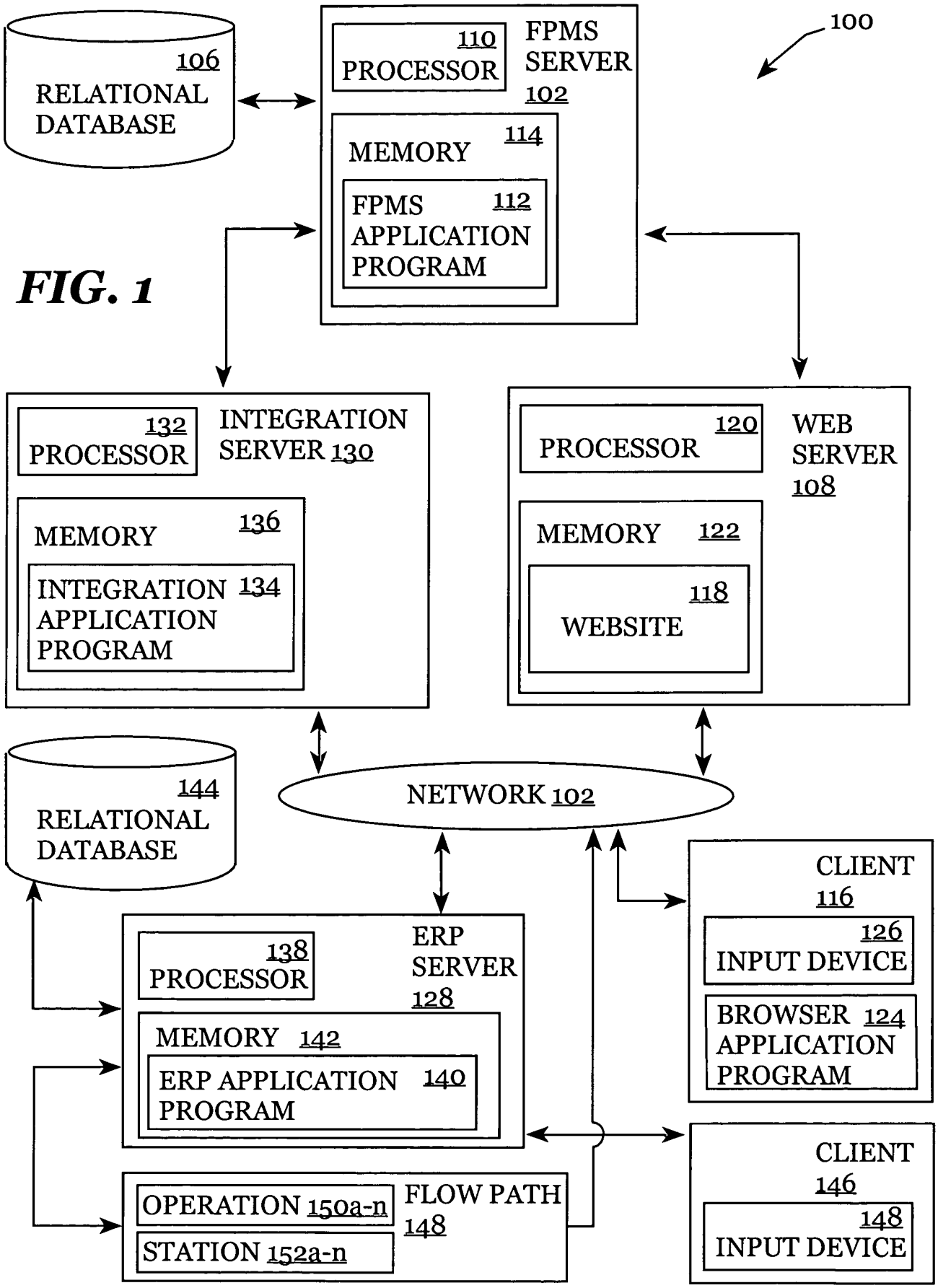
100
106
RELATIONAL DATABASE
110
PROCESSOR
FPMS SERVER 102
MEMORY 114
FPMS APPLICATION PROGRAM 112
132
PROCESSOR
INTEGRATION SERVER 130
MEMORY 136
INTEGRATION APPLICATION PROGRAM 134
120
PROCESSOR
WEB SERVER 108
MEMORY 122
118
WEBSITE
144
RELATIONAL DATABASE
NETWORK 102
CLIENT 116
126
INPUT DEVICE
BROWSER 124 APPLICATION PROGRAM
138
PROCESSOR
ERP SERVER 128
MEMORY 142
ERP APPLICATION PROGRAM 140
OPERATION 150a-n
STATION 152a-n
FLOW PATH 148
CLIENT 146
148
INPUT DEVICE

FIG. 1

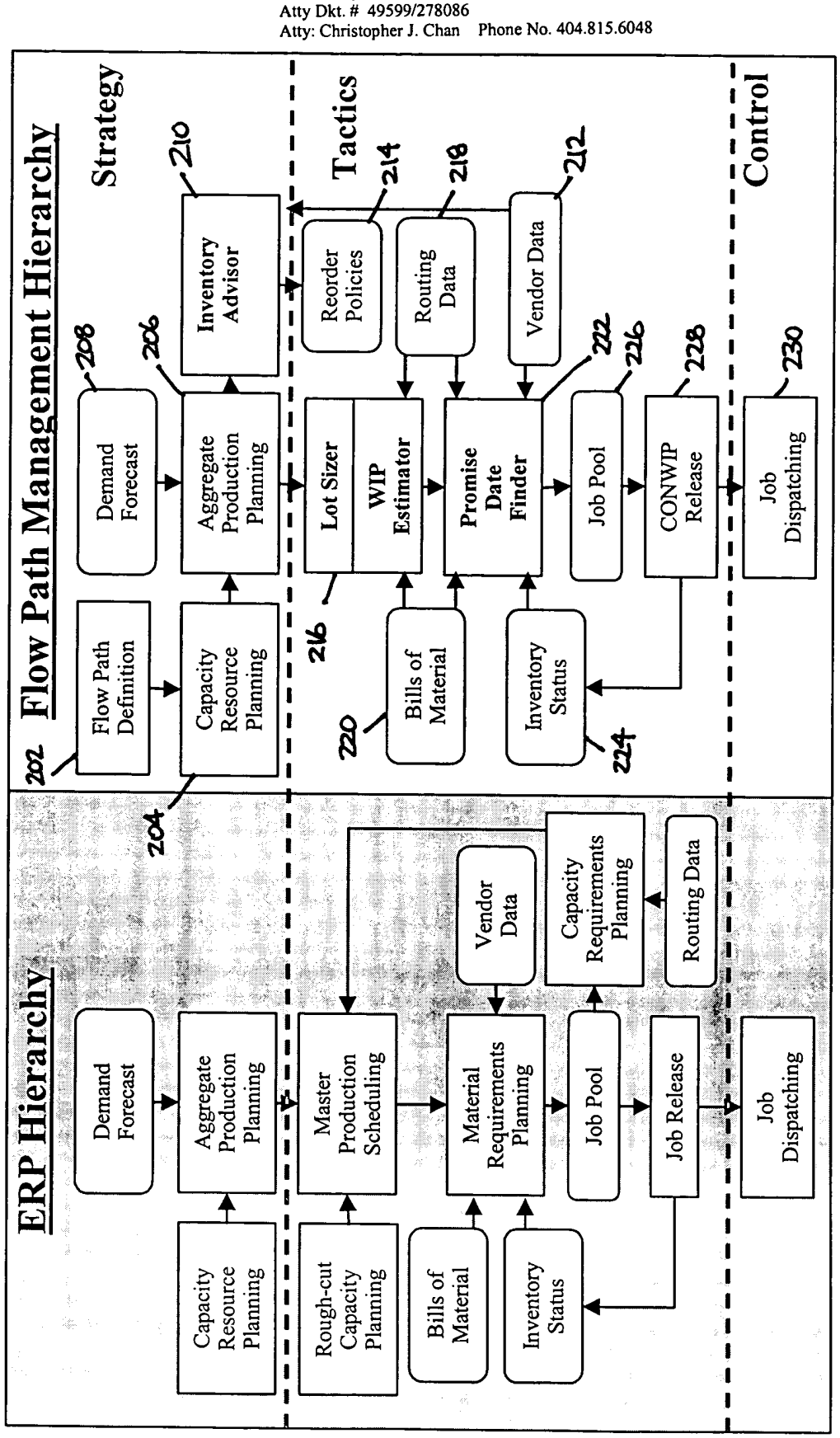
200
ERP Hierarchy
Flow Path Management Hierarchy
Strategy
Tactics
Control
202
204
206
208
210
212
214
216
218
220
222
224
226
228
230
Demand Forecast
Aggregate Production Planning
Capacity Resource Planning
Rough-cut Capacity Planning
Master Production Scheduling
Bills of Material
Material Requirements Planning
Inventory Status
Vendor Data
Capacity Requirements Planning
Routing Data
Job Pool
Job Release
Job Dispatching
Flow Path Definition
Inventory Advisor
Reorder Policies
Routing Data
Vendor Data
Lot Sizer
WIP Estimator
Promise Date Finder
Job Pool
CONWIP Release
Job Dispatching
Bills of Material
Inventory Status

FIG. 2

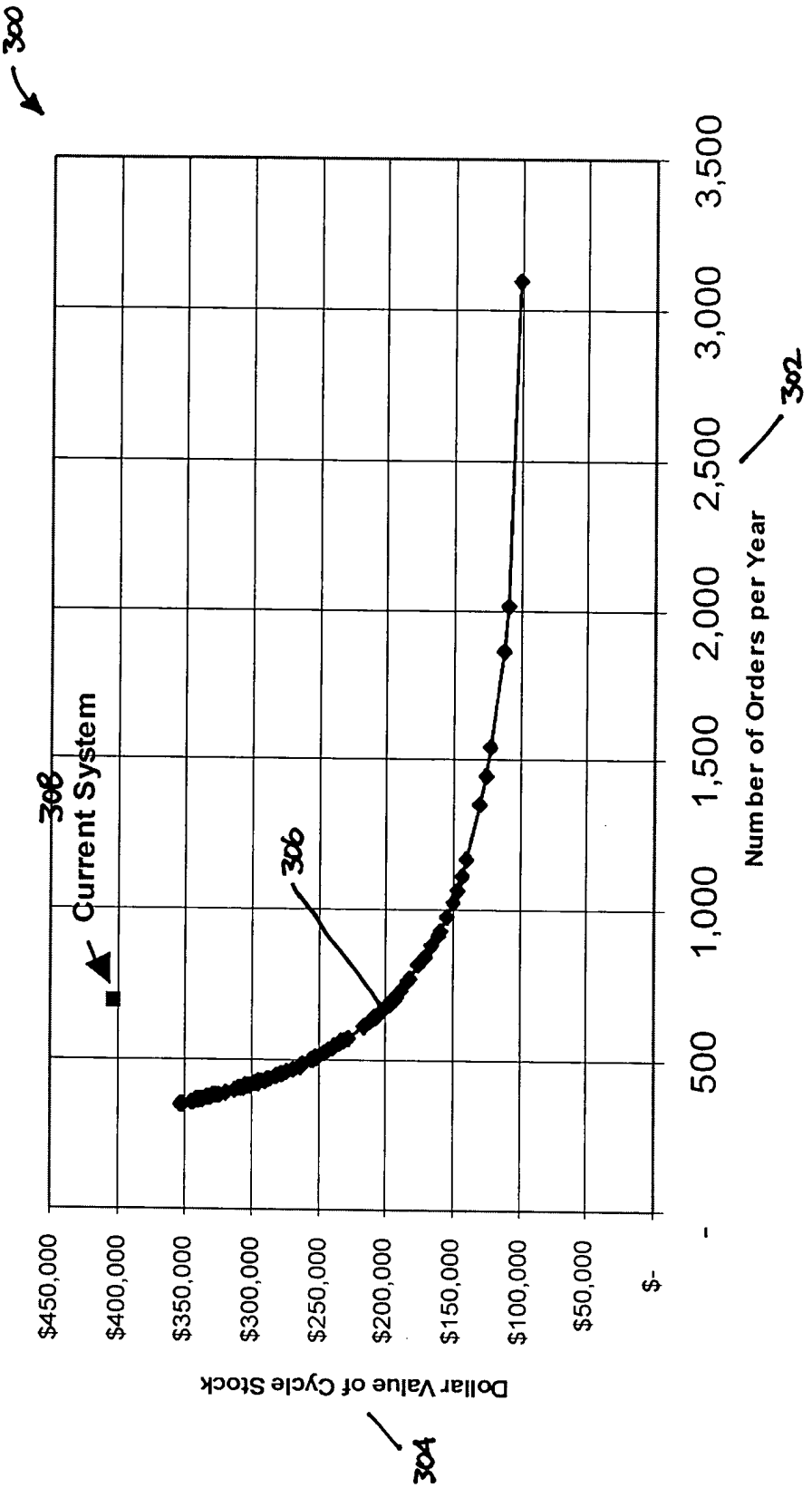
300
Dollar Value of Cycle Stock
304
$450,000
$400,000
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$-
308
Current System
306
-
500
1,000
1,500
2,000
2,500
3,000
3,500
Number of Orders per Year
302

FIG. 3

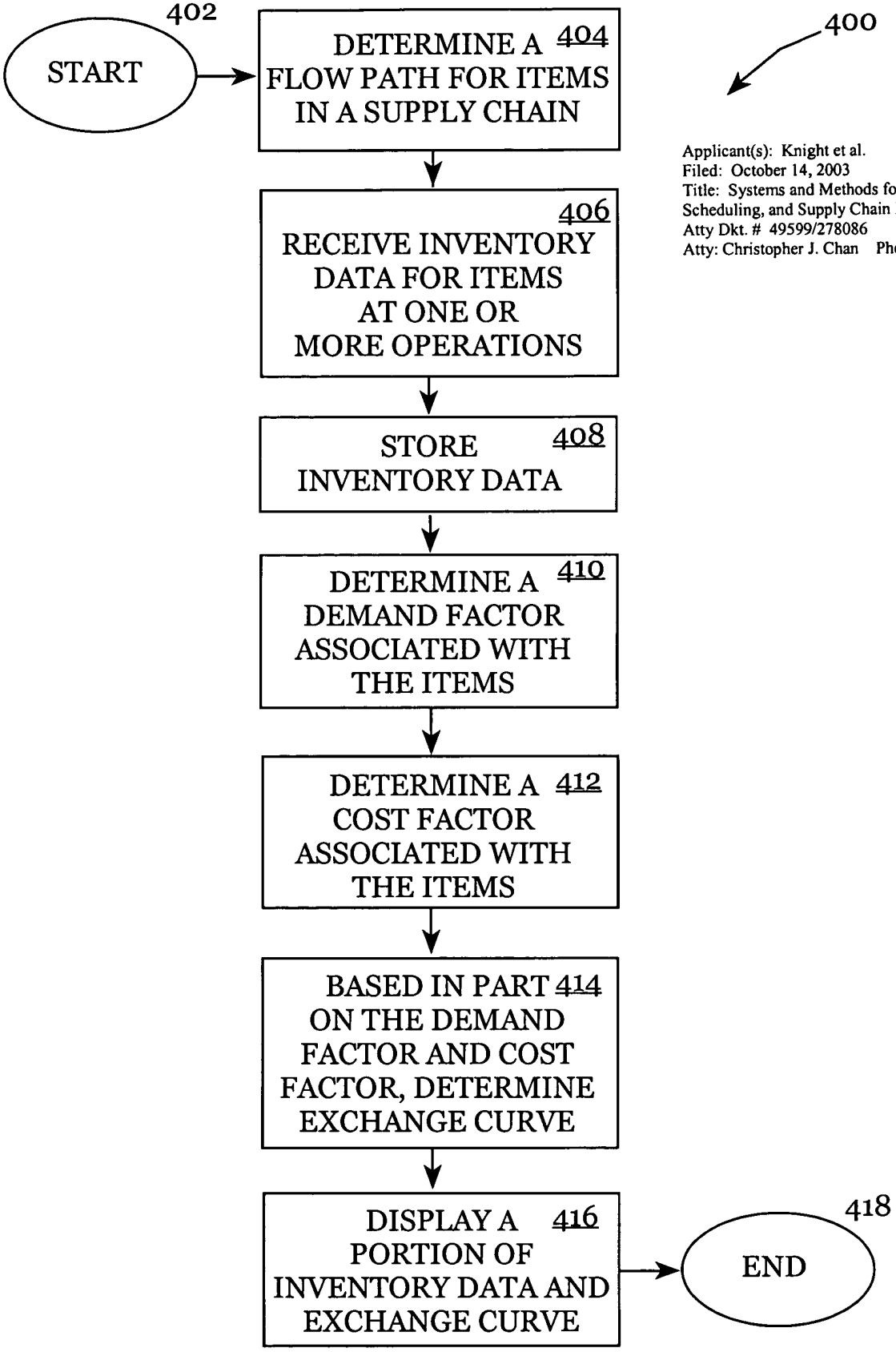
400
402
START
DETERMINE A FLOW PATH FOR ITEMS IN A SUPPLY CHAIN 404
RECEIVE INVENTORY DATA FOR ITEMS AT ONE OR MORE OPERATIONS 406
STORE INVENTORY DATA 408
DETERMINE A DEMAND FACTOR ASSOCIATED WITH THE ITEMS 410
DETERMINE A COST FACTOR ASSOCIATED WITH THE ITEMS 412
BASED IN PART ON THE DEMAND FACTOR AND COST FACTOR, DETERMINE EXCHANGE CURVE 414
DISPLAY A PORTION OF INVENTORY DATA AND EXCHANGE CURVE 416
418
END

FIG 4A

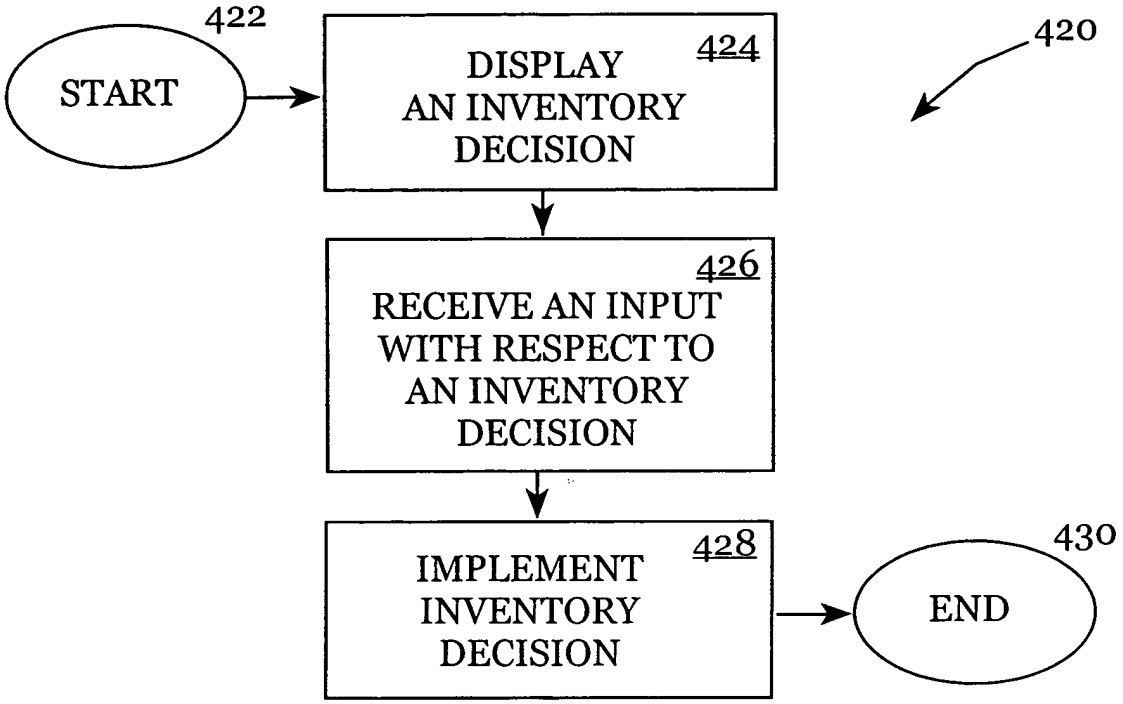
422
START
424
DISPLAY AN INVENTORY DECISION
420
426
RECEIVE AN INPUT WITH RESPECT TO AN INVENTORY DECISION
428
IMPLEMENT INVENTORY DECISION
430
END

FIG. 4B

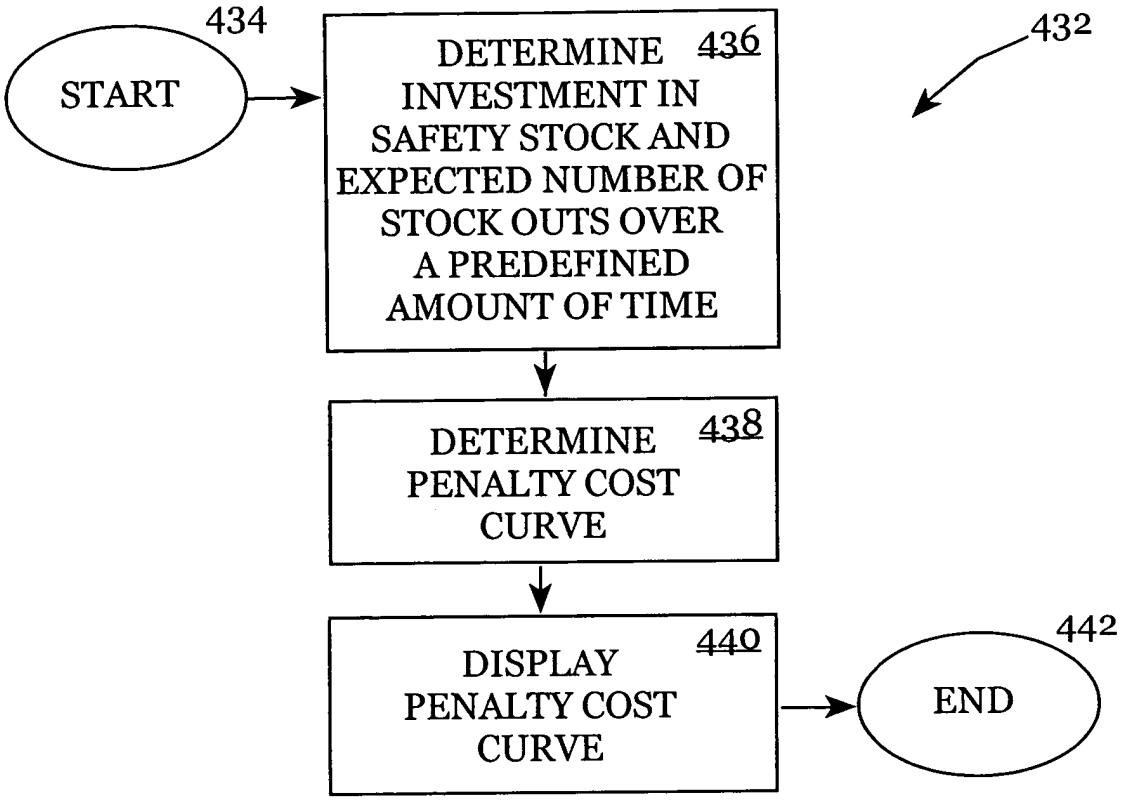
434
START
DETERMINE INVESTMENT IN SAFETY STOCK AND EXPECTED NUMBER OF STOCK OUTS OVER A PREDEFINED AMOUNT OF TIME
436
432
DETERMINE PENALTY COST CURVE
438
DISPLAY PENALTY COST CURVE
440
END
442

FIG. 4C

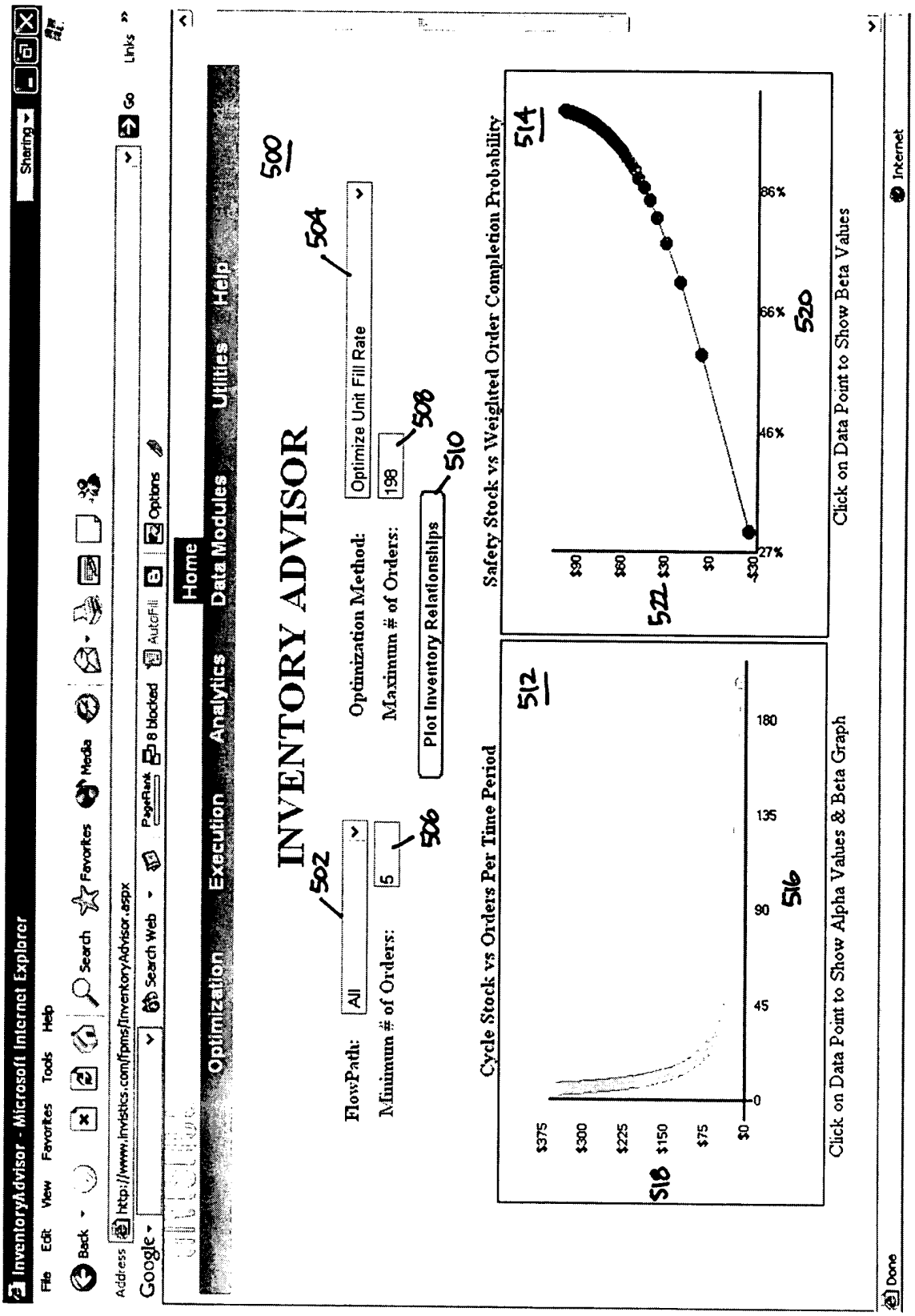
InventoryAdvisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.invtstics.com/fpms/InventoryAdvisor.aspx
Optimization Execution Analytics Data Modules Utilities Help
500
INVENTORY ADVISOR
502
FlowPath: All
Minimum # of Orders: 5
506
Optimization Method: Optimize Unit Fill Rate
504
Maximum # of Orders: 198
508
Plot Inventory Relationships
510
Cycle Stock vs Orders Per Time Period
512
$375 $300 $225 $150 $75 $0
0 45 90 135 180
518
516
Click on Data Point to Show Alpha Values & Beta Graph
Safety Stock vs Weighted Order Completion Probability
514
$90 $60 $30 $0 -$30
27% 46% 66% 86%
522
520
Click on Data Point to Show Beta Values
Done
Internet

FIG. 5

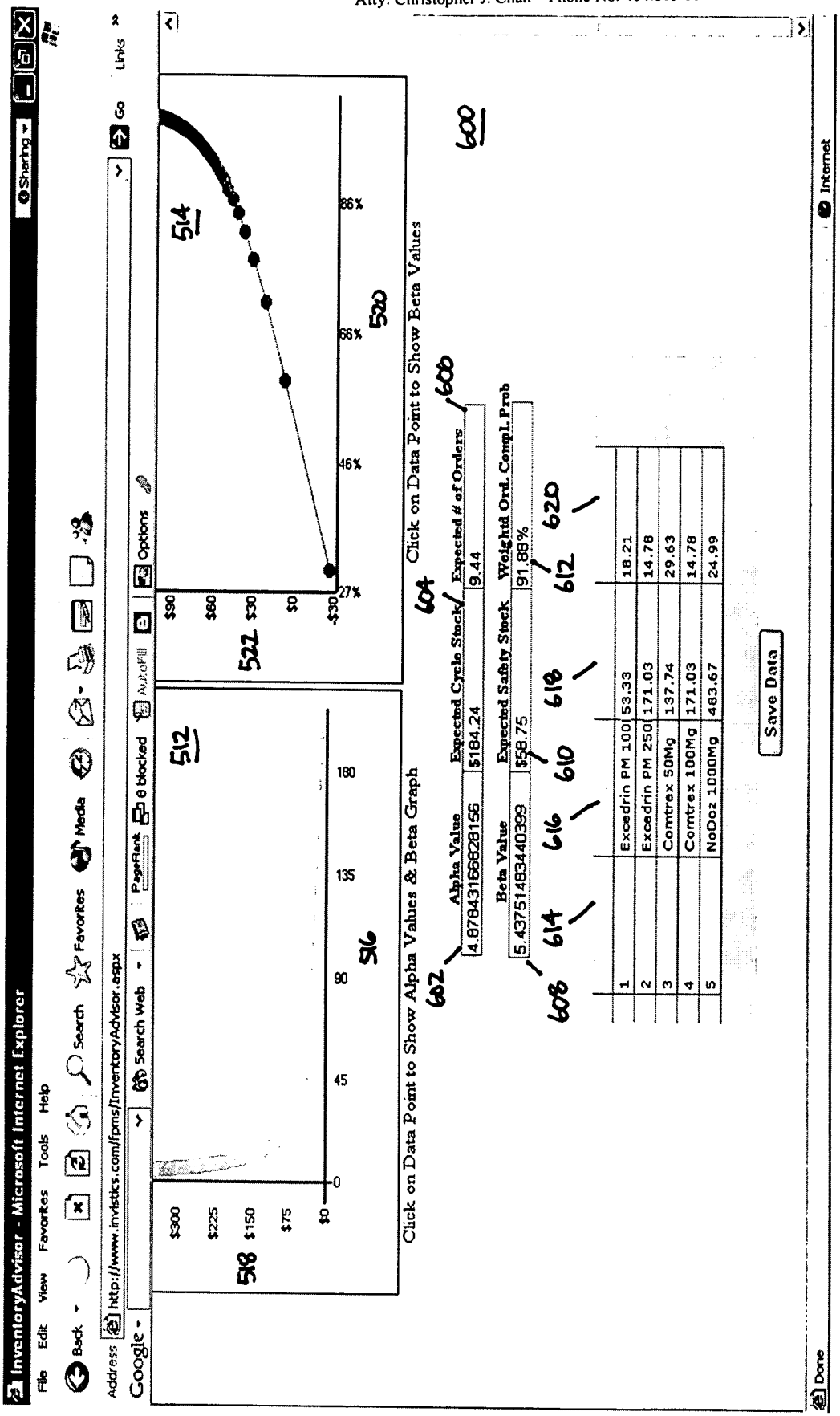
InventoryAdvisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.invistics.com/fpms/InventoryAdvisor.aspx
Click on Data Point to Show Alpha Values & Beta Graph
Click on Data Point to Show Beta Values
Alpha Value
Expected Cycle Stock
Expected # of Orders
4.878431166828156
$184.24
9.44
Beta Value
Expected Safety Stock
Weighted Ord. Compl. Prob
5.437514834440399
$58.75
91.88%
1 Excedrin PM 100 53.33 18.21
2 Excedrin PM 250 171.03 14.78
3 Comtrex 50Mg 137.74 29.63
4 Comtrex 100Mg 171.03 14.78
5 NoDoz 1000Mg 483.67 24.99
Save Data
502
504
506
508
510
512
514
516
518
520
522
600
602
604
606
608
610
612
614
616
618
620

FIG. 6

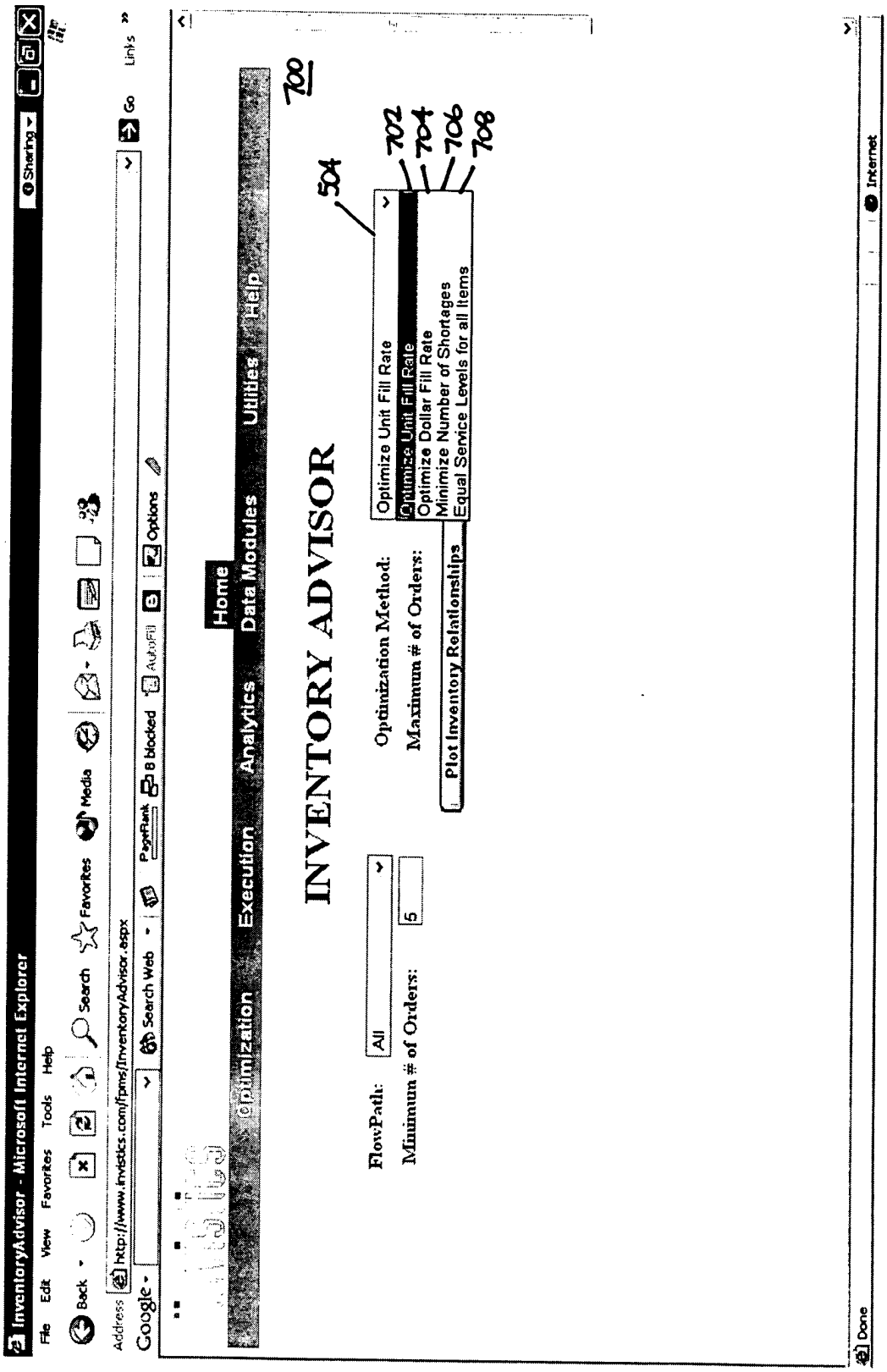
InventoryAdvisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.invistics.com/fpms/InventoryAdvisor.aspx
Optimization
Execution
Analytics
Home
Data Modules
Utilities
Help
INVENTORY ADVISOR
700
504
FlowPath: All
Minimum # of Orders: 5
Optimization Method:
Maximum # of Orders:
Optimize Unit Fill Rate
Optimize Unit Fill Rate
Optimize Dollar Fill Rate
Minimize Number of Shortages
Equal Service Levels for all Items
702
704
706
708
Plot Inventory Relationships
Done
Internet

FIG. 7

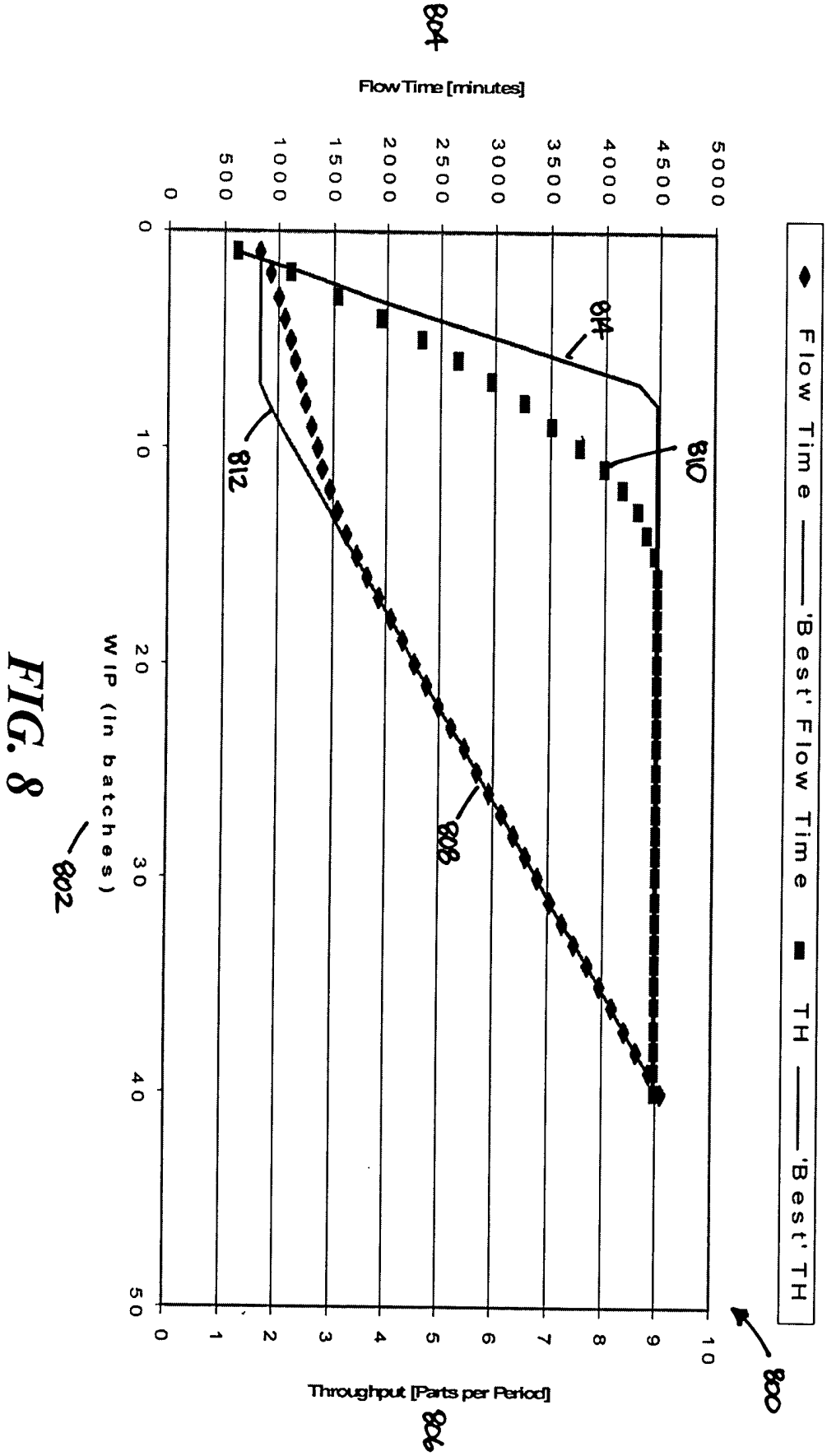
804
Flow Time [minutes]
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Flow Time ——— 'Best' Flow Time ■ TH ——— 'Best' TH
800
814
810
812
808
0
10
20
30
40
50
WIP (in batches)
802
0
1
2
3
4
5
6
7
8
9
10
Throughput [Parts per Period]
806

FIG. 8

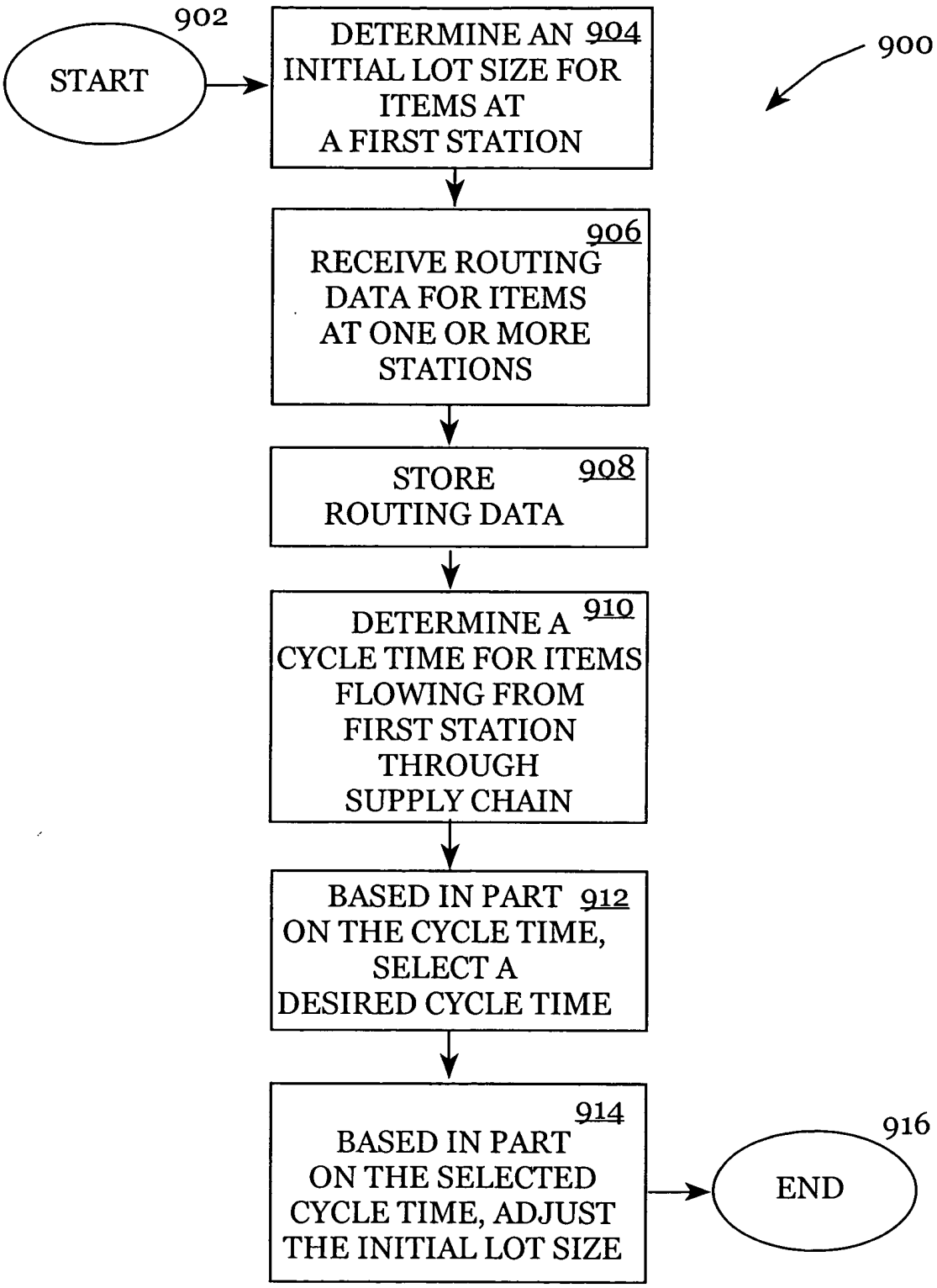
900
902
START
DETERMINE AN INITIAL LOT SIZE FOR ITEMS AT A FIRST STATION
904
RECEIVE ROUTING DATA FOR ITEMS AT ONE OR MORE STATIONS
906
STORE ROUTING DATA
908
DETERMINE A CYCLE TIME FOR ITEMS FLOWING FROM FIRST STATION THROUGH SUPPLY CHAIN
910
BASED IN PART ON THE CYCLE TIME, SELECT A DESIRED CYCLE TIME
912
BASED IN PART ON THE SELECTED CYCLE TIME, ADJUST THE INITIAL LOT SIZE
914
END
916

FIG. 9A

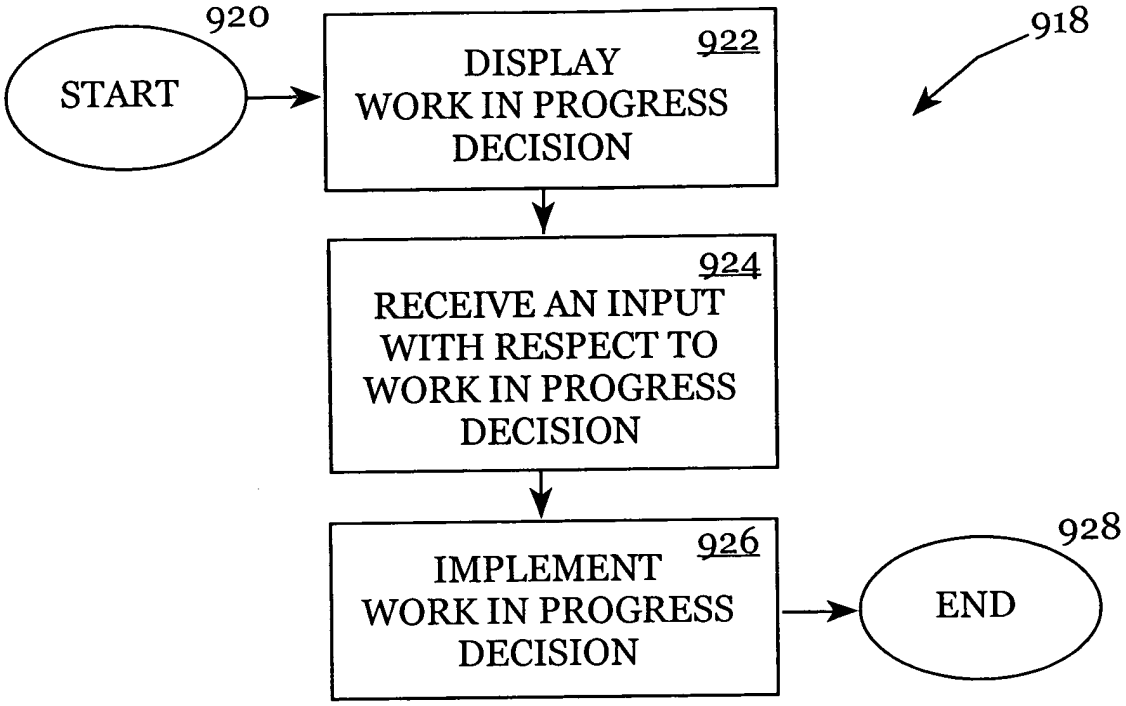
920
START
922
DISPLAY WORK IN PROGRESS DECISION
918
924
RECEIVE AN INPUT WITH RESPECT TO WORK IN PROGRESS DECISION
926
IMPLEMENT WORK IN PROGRESS DECISION
928
END

FIG. 9B

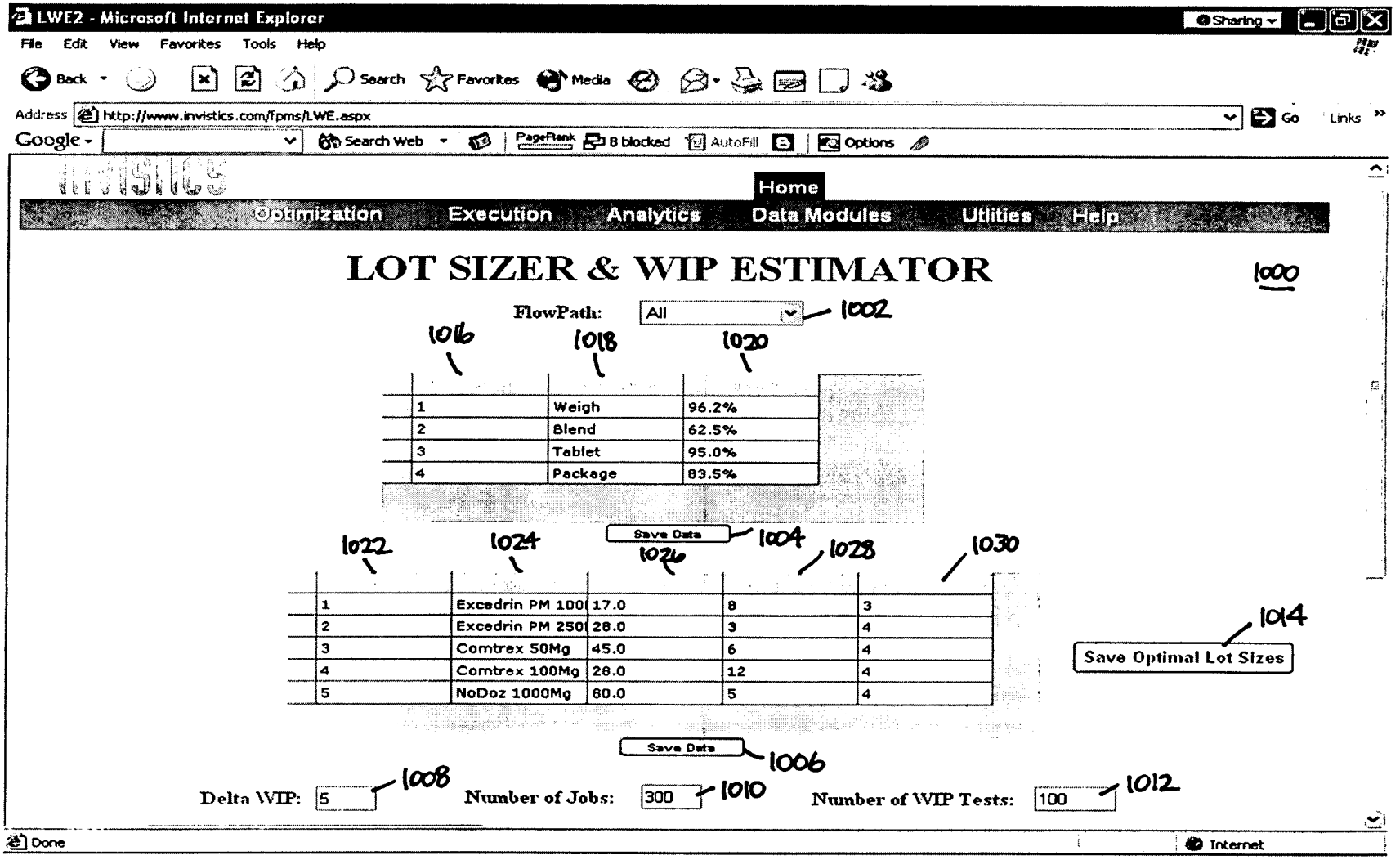

FIG. 10

Applicant(s): Knight et al.
Filed: October 14, 2003
Title: Systems and Methods for Improving Planning, Scheduling, and Supply Chain Management
Atty Dkt. # 49599/278086
Atty: Christopher J. Chan Phone No. 404.815.6048

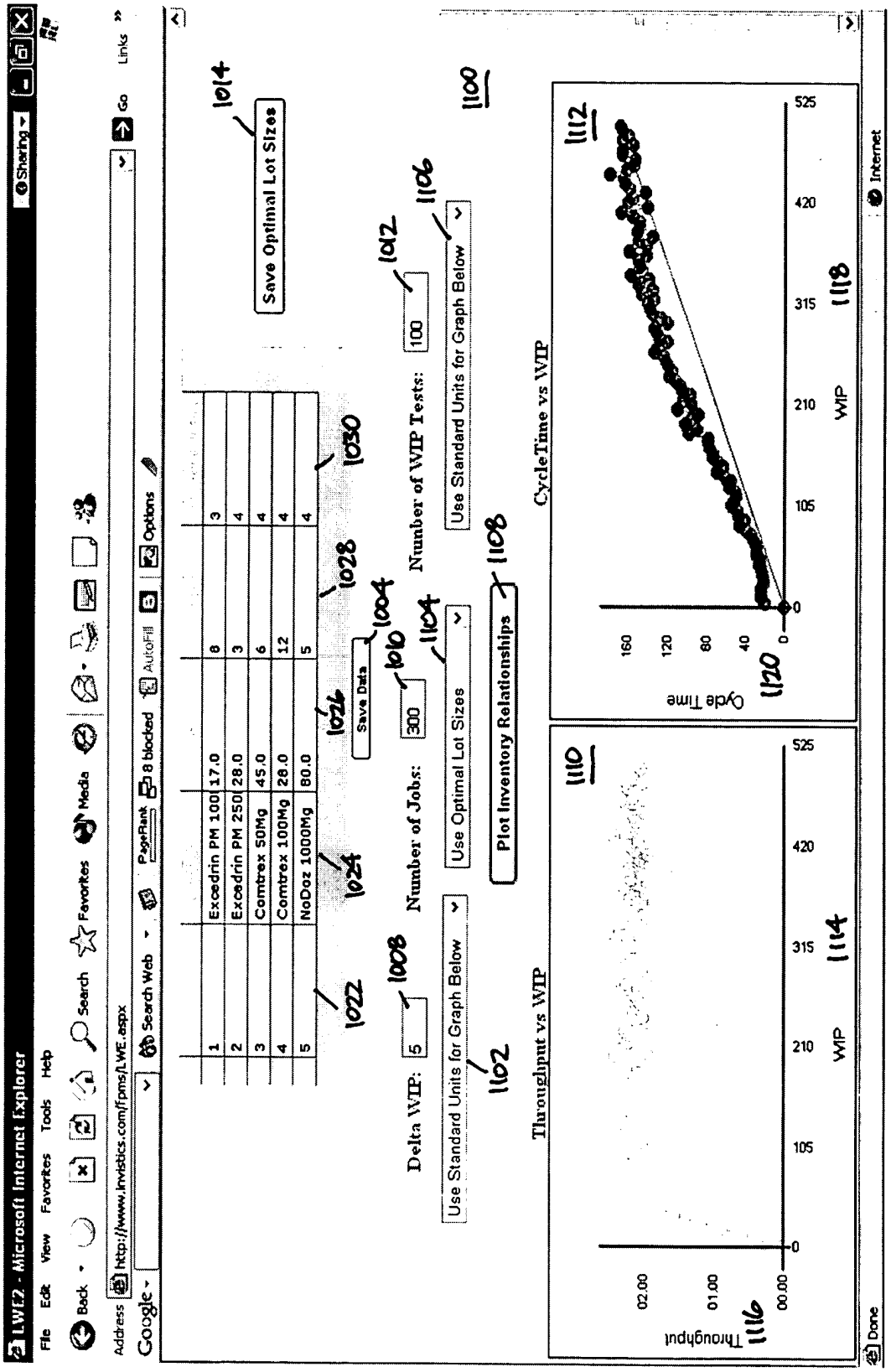
LWE2 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.invistics.com/fpms/LWE.aspx
Google Search Web PageRank 8 blocked AutoFill Options
Links
Sharing
1014
Save Optimal Lot Sizes
1022
1024
1030
1028
1026
Save Data
1004
1010
1102
1008
Delta WIP: 5
Use Standard Units for Graph Below
Number of Jobs: 300
1104
Use Optimal Lot Sizes
Plot Inventory Relationships
1108
1042
Number of WIP Tests: 100
1106
Use Standard Units for Graph Below
1100
Throughput vs WIP
1110
Throughput
02.00
01.00
00.00
0
105
210
315
420
525
WIP
1114
1116
CycleTime vs WIP
1112
Cycle Time
160
120
80
40
0
1120
1118
Done
Internet

FIG. 11

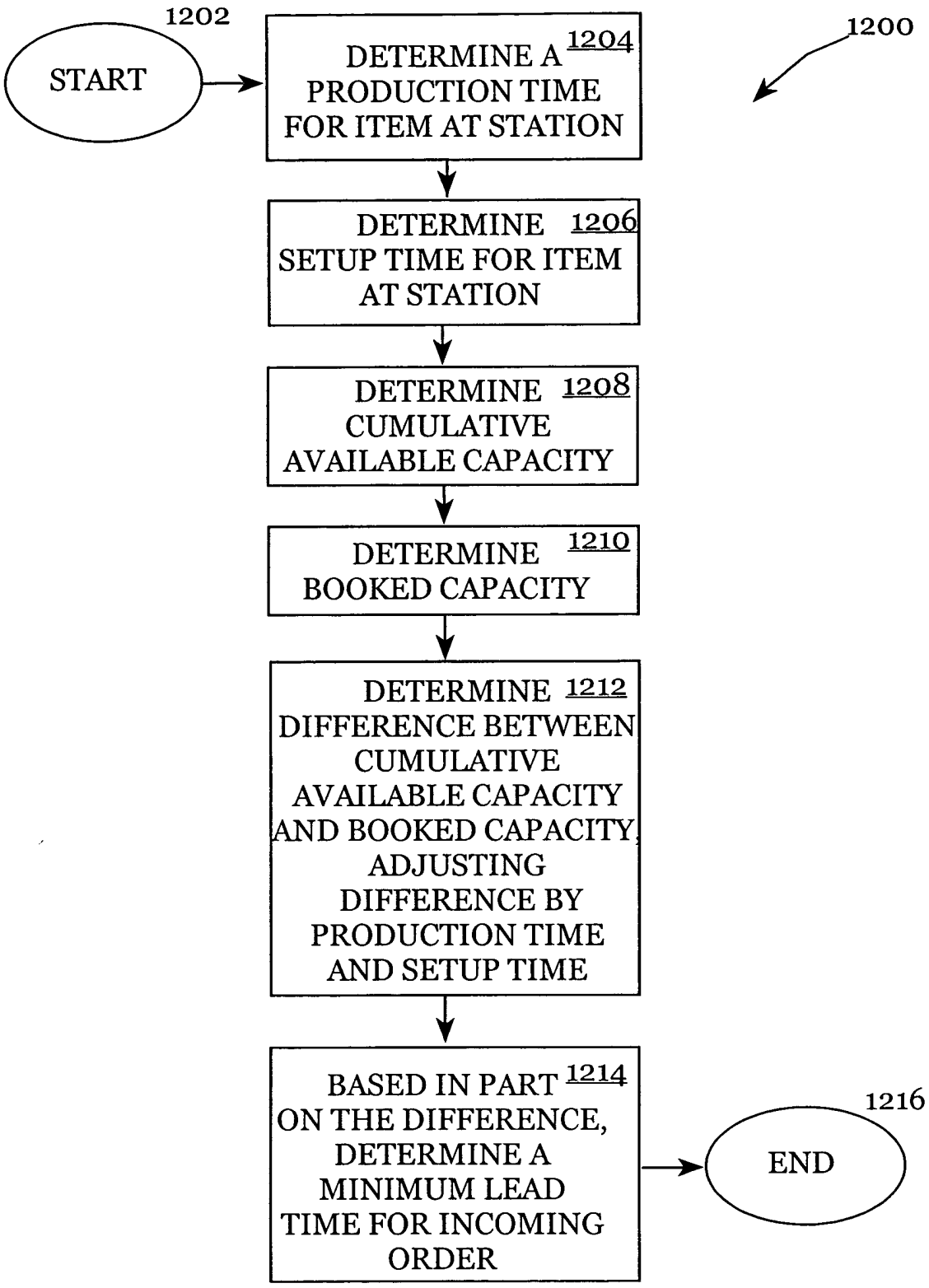
1202
START
1200
DETERMINE A PRODUCTION TIME FOR ITEM AT STATION 1204
DETERMINE SETUP TIME FOR ITEM AT STATION 1206
DETERMINE CUMULATIVE AVAILABLE CAPACITY 1208
DETERMINE BOOKED CAPACITY 1210
DETERMINE DIFFERENCE BETWEEN CUMULATIVE AVAILABLE CAPACITY AND BOOKED CAPACITY, ADJUSTING DIFFERENCE BY PRODUCTION TIME AND SETUP TIME 1212
BASED IN PART ON THE DIFFERENCE, DETERMINE A MINIMUM LEAD TIME FOR INCOMING ORDER 1214
1216
END

FIG. 12